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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/048,128	05/22/2002	Andrew D. Hirzel		2838

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EXAMINER

JONES, JUDSON

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 11/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/048,128

Applicant(s)

HIRZEL, ANDREW D.

Examiner

Judson H. Jones

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11 and 14-17 is/are rejected.
- 7) ☒ Claim(s) 2,12,13,18 and 19 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>041102</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 2 recites that the movement of the armature relative to the housing is radial in nature. According to Merriam Webster's Collegiate Dictionary Tenth Edition copyright 1997 displacement is "the difference between the initial position of something (as a body or a geometric figure) and any later position." The specification and drawings show an armature that moves axially relative to the housing. On page 2 lines 13-23 of the specification a "radial magnet type voice coil actuator" is described. In the last sentence of the paragraph it states, "The armature 30 is slidably received on the post 25 to allow travel in an axial direction"

While applicant does mention on page 8 of the specification that "These concepts, while described in a context of a linear, or axial, voice coil actuator, are also applicable in rotary applications," the drawings, specification and claims are all for a linear motor embodiment. There is no adequate enablement for a rotary embodiment of the instant invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 6, 8, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Stupak, Jr. 4,518,881 A (of record). Stupak Jr. discloses a voice coil motor having a coil 48 carried by an armature 46 and a magnet 30, 32 with the armature axially movable relative to the housing with housing portions 36, 38 being non-uniform for the purpose of facilitating uniform magnetic flux transmission to the coil as described in column 3 lines 1-8. More uniform flux transmission would improve the linear proportionality of the armature displacement.

In regard to claim 3, see Stupak, Jr. column 1 lines 31 ½ to 34 ½.

In regard to claim 4, see Stupak, Jr. column 3 lines 21 ½ to 24 ½.

In regard to claims 6, 8 and 10, see Stupak, Jr. figure 3.

In regard to claim 11, see Stupak, Jr. column 2 lines 34-37.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Parker 3,917,914

A in view of Stupak, Jr. Parker discloses the moving magnet type loudspeaker but does not disclose at least one of the coil, the magnet and the housing being non-uniform. Stupak teaches making a part of the voice coil motor non-uniform in order to increase the linearity of the device in column 3 lines 1-8. (In column 2 lines 63-65 discusses improving the linearity of the force

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generated on the coil.) Since Stupak, Jr. and Parker are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have made an element of the voice coil motor non-uniform in order to increase the linearity of the device.

Claims 7, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stupak, Jr. in view of Michl 521,269 A (of record). Stupak, Jr. discloses a voice coil motor with tapered housing parts for reducing flux leakage and thus for improving the uniformity of the force generated. Uniformity of force generated leads in turn to improved linear positioning of the device. Michl teaches another way of improving linear positioning in column 1 lines 13-36. Since Michl and Stupak, Jr. are from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have adjusted the uniformity of the coil winding instead of tapering the housing parts in a situation where only a limited number of voice coil motor units were being produced because changing the program of a coil winding machine is easier than machining housing parts.

In regard to claim 14, see Michl figure 2.

In regard to claim 15, see Michl figure 5.

Claims 9, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stupak, Jr. in view of Sukagawa et al. 5,986,362 A (of record). Stupak, Jr. discloses a voice coil motor with tapered housing parts for reducing flux leakage and thus for improving the uniformity of the force generated. Uniformity of force generated leads in turn to improved linear positioning of the device. Sakagawa et al. teaches another way of improving linear positioning in column 2 lines 33 ½ to 37 ½ by making the magnet non-uniform. Since Sukagawa and Stupak, Jr. are from

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the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have made the magnet non-uniform instead of the coil or housing for a device where the magnet was made by compressed metal and thus would be easily changed in shape by changing the shape of the mold used in making the magnet.

In regard to claim 16, see the surface 31 in Sukagawa et al. figure 5A.

In regard to claim 17, see surfaces 36, 35 and 32 in Sukagawa et al. figure 5A.

Allowable Subject Matter

Claim 2 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 12, 13, 18 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record does not disclose or teach linearly tapering or parabolically tapering a portion of a voice coil motor in order to make the displacement of the voice coil motor substantially linearly proportional to the electric current flowing through the coil.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H. Jones whose telephone number is 571-272-2025. The examiner can normally be reached on 8-4:30 M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JHJ 11/15/2004



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